



# Microsimulation Model on Worker Leave Study

## SUMMARY

In 2017, the Chief Evaluation Office (CEO) funded contractors IMPAQ International and the Institute for Women's Policy Research (IWPR) to conduct the Microsimulation Model on Worker Leave. The goal of the study was to produce an updated, open-source, publicly available simulation tool based on the Albelda Clayton-Matthews/IWPR Paid Family and Medical Leave Simulation Model (ACM model). The resulting Worker Paid Leave Usage Simulation (Worker PLUS) is an open-source simulation tool that can be used by researchers and federal, state, and local policy makers to estimate the effects of various worker leave scenarios and policy options on worker leave-taking behavior, and to estimate the benefits paid as well as costs of administering any given program.

The Worker PLUS model employs public microdata from the Department of Labor's Family and Medical Leave Act (FMLA) Employee Survey to train models for individual-level leave needs and behaviors. When a user inputs paid leave program parameters, the model simulates specific leave-taking behavior and outcomes using demographic data from the five-year American Community Survey (ACS) Public Use Microdata Sample (PUMS). The simulation engines have been developed in both Python and R, two of the most popular open-source programming languages, and the model code is fully transparent and publicly available to facilitate future data updates and model development. The model offers a graphical interface for increased accessibility by non-technical users.

Users can download all of the files needed to install and run the Worker PLUS simulator below, as well as a user manual and data dictionary. A companion to the simulation model, users can find a resource document that reviews the different types of administrative costs observed in planned and extant state-level paid family and medical leave programs and how these costs vary across states, and an Excel template that helps user plan, estimate and test the administrative costs of running a new program. A series of issue briefs also accompany the simulator to help researchers, policy analysts, and the public understand and use the Worker PLUS model. The issue briefs explore example simulations, model testing, and benchmarking studies.

The DOL-funded study is a result of the annual process to determine the Department's research priorities for the upcoming year. It contributes to the labor evidence base to inform [data, methods, and tools](#) and [worker leave](#) programs and policies and addresses Department strategic goals and priorities.

## KEY TAKEAWAYS

- The Worker PLUS simulation model uses updated public microdata and predictive modelling to allow users to:





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- Simulate different scenarios of a paid leave program
  - Estimate the program benefit costs
  - Estimate payroll tax revenue needed to fund the program benefit costs
  - Perform population analyses for program participants and eligible workers by focusing on their leave-taking behavior
  - Compare simulation results across different sets of parameter input
- The Worker PLUS model **has an additional Benefit Financing module that allows users to estimate payroll tax revenue needed to fund program outlay and the estimated tax burden across demographic subgroups.**
- The Worker PLUS model also **allows analysis of the effects of a paid leave program on a specific population** (such as low-wage workers, or women of childbearing age) and the distribution of program benefits by demographic characteristics.
- In the *Estimating Impacts of Leave Policies on Low-Wage Workers* issue brief, researchers implemented a hypothetical simulation using data from workers in Maryland and found **the adoption of a paid leave program is progressive in that it benefits low-wage workers and their families more than the higher-wage groups.** Among low-wage workers, the simulation predicts about a 10 percent increase in the number of leave takers and the low-wage workers account for 52% of all program participants.
- In *A Guide to Performing a Policy Simulation of a Parental Leave Program for Federal Civilian Employees*, researchers performed a policy simulation of a recently signed law under which a new parental leave program would be implemented among federal civilian workers. With the model parameters configured to best reflect the known features of the program, adopting conservative settings for unknown features, and adjusting for leave length caps and eligible population base estimate, **the model is shown to produce outlay estimates that are comparable to the Congressional Budget Office's program cost projection.**
- The benchmarking study explained in *A Benchmarking Study of the Worker PLUS Model Results* shows that the model **can predict program outlays and eligible worker counts in similar accuracy as the existing ACM model** for the three state-run worker paid leave programs in California, New Jersey, and Rhode Island. **The Worker PLUS model predicts program participant counts more accurately than the existing ACM model by directly calibrating take-up rates toward actual participant counts reported by states.**





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**PARTNER AGENCY:** Women's Bureau

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